CIMSS Outreach and Education Activities

NOAA Satellite Direct Readout Conference

December 9th, 2004

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Cooperative **I**nstitute for **M**eteorological **S**atellite **S**tudies

Space Science and Engineering Center

UW-Madison

Why CIMSS does Outreach in Satellite Meteorology

- **To raise awareness about Satellite technology**

  Environmental Satellites provide the most important and comprehensive measurements of planet Earth, critical for accurate weather forecasts and detailed climate monitoring

  BUT

  Many people don't understand the contributions satellites make to modern society. Since they are *extremely expensive,* continued improvements in satellite measurements are easier to justify as people become more satellite savvy.

- **To continue the legacy of Dr. Verner E. Suomi**

Dr. Verner E. Suomi

SSEC/CIMSS founder who worked with NOAA and NASA scientists during the pioneering decades of weather satellites

Established Outreach Programs

http://cimss.ssec.wisc.edu/education/education.html

Web based Education:

- UW-courses in the AOS department
- Suomi Virtual Museum
- VISITview
- Satellite Meteorology for Grades 7-12
- Wisconsin Weather Stories

Workshops:

- Summer Workshops for High School Students (since 1991)
- Teacher Workshops in Satellite Meteorology (since 2003)

Other Resources for Educators and Science Students

- Satellite Meteorology CD
- Teaching Applets
- Discovery Images and Quiz Images
- Suomi Scholarship
- On-line Curriculum (Weather Stories)

High School Student Workshop on Atmospheric, Earth & Space Science

This weeklong workshop features an exciting agenda in meteorology, astronomy, land remote sensing & geology

Satellite meteorology & satellite imagery has always held a pivotal role in the workshop agenda

VISITview

VISITview is a platform independent **distance learning software** that allows instructors to conduct live interactive instructional sessions with multiple groups of students to view the same series of images, graphics text and animations.

VISIT

Training Sessions

The VISIT Program

VISIT People

FAQ

Links / Tutorials

RAMSDIS Online

VISITview™ Home Page

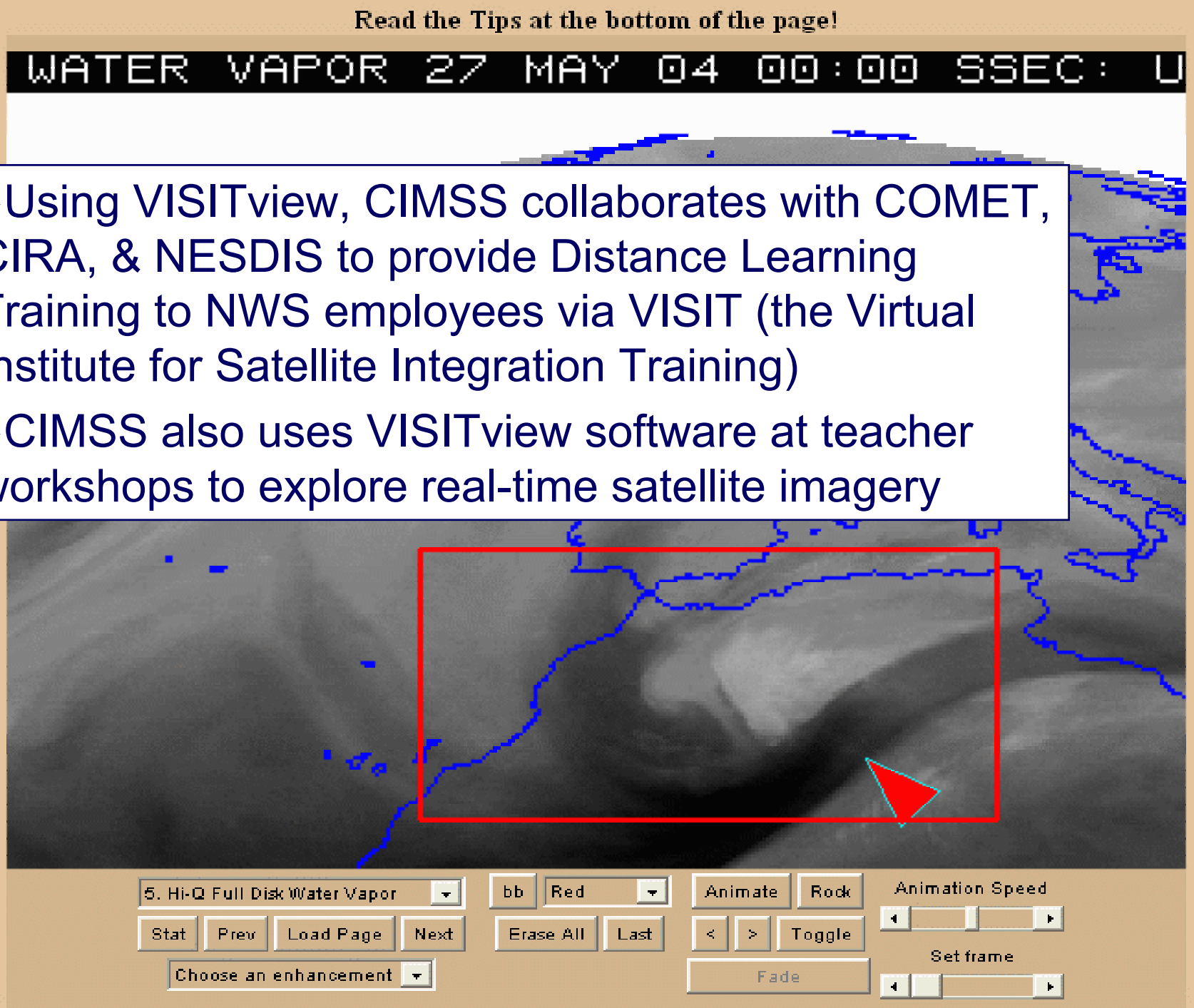
page created 11/4/1998

last software update 4/30/2004

Updated!! Site Index & Quick Reference

VISITview™ is a **teletraining** and real-time **collaboration** tool developed for the National Weather Service VISIT program to meet the needs of science training of their forecasters. While it emphasizes functions needed to realize these goals, it can be used for any lawful application where image animations, zooming, colorizing, and the like are needed. It uses an integrated whiteboard/blackboard and provides for a chat function as well as page-by-page quizzes and external links, to connect instructor(s) to many students. You may also record voice and all "annotation" activities for synchronized playback has been added to VISITview™'s capabilities.

NWS Teletraining	Real-time collaborations	Just looking??
VISIT project homepage		Try it out - join a live
Quick-Start for VISIT		


Read the Tips at the bottom of the page!
WATER VAPOR 27 MAY 04 00:00 SSEC: U
Using VISITview, CIMSS collaborates with COMET, CIRA, & NESDIS to provide Distance Learning Training to NWS employees via VISIT (the Virtual Institute for Satellite Integration Training)
CIMSS also uses VISITview software at teacher workshops to explore real-time satellite imagery
5. Hi-Q Full Disk Water Vapor
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CIMSS Teacher Workshops

2003 "I am excited to implement these well-made resources“

2004 “ Awesome – one of the most useful & needed workshops I have ever been to”

CIMSS conducted two-day workshops in **Satellite Meteorology** during 2003 & 2004, training 36 teachers

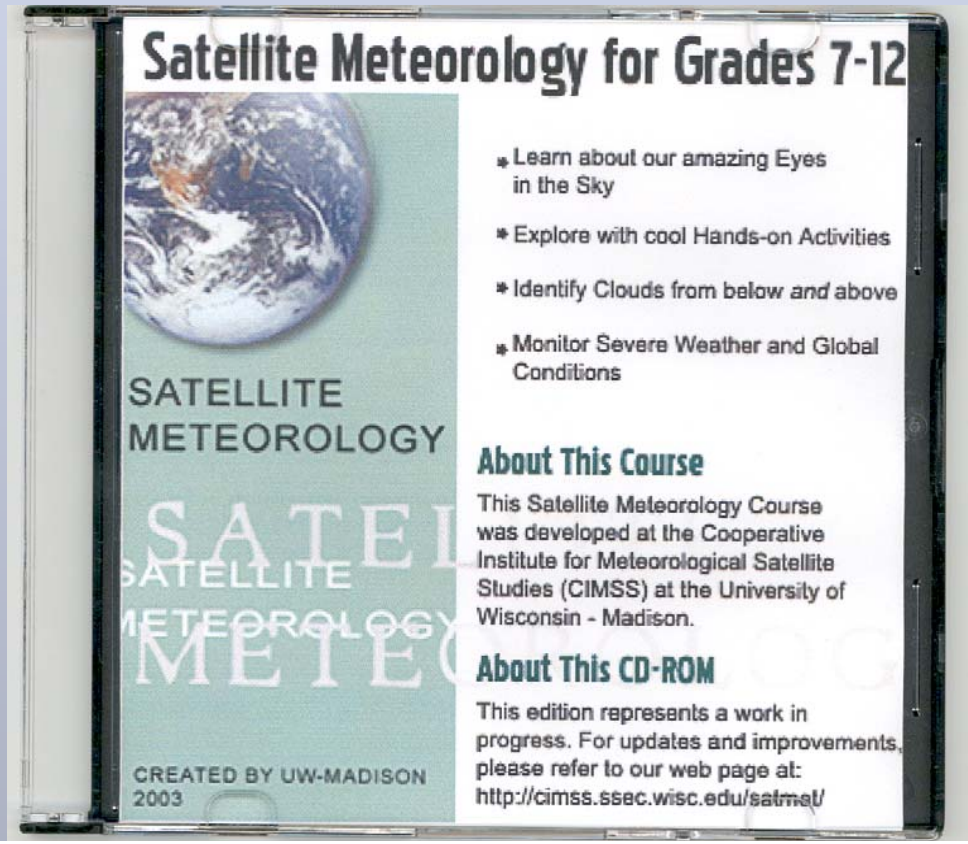
If each teacher conveys this knowledge to as few as 25 students each year this translates to 900 satellite savvy citizens!

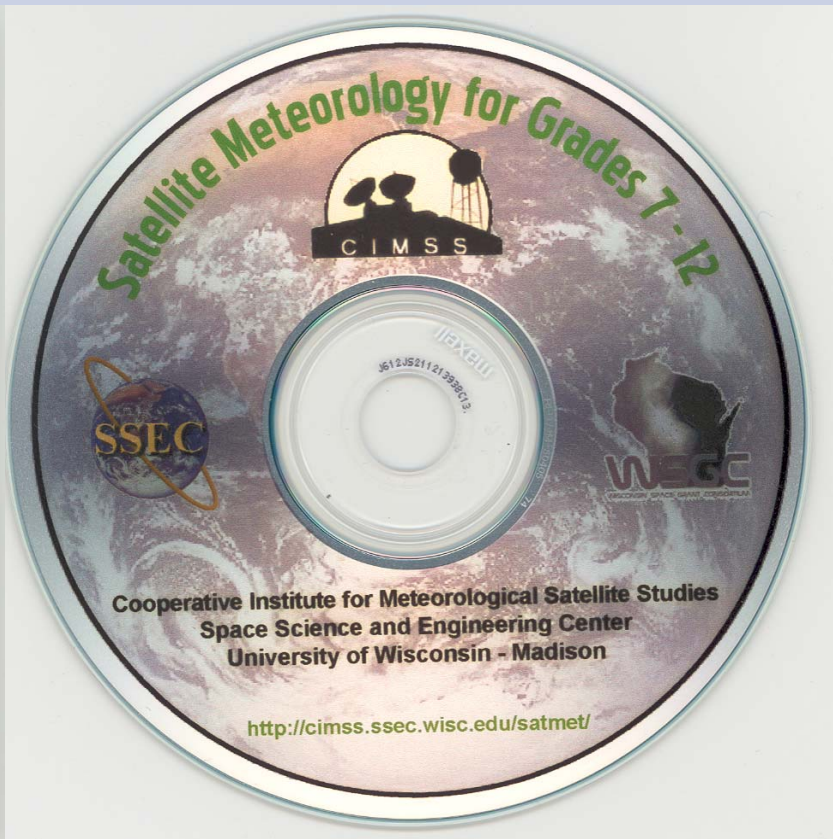
1 class (25 x 36) = 900
2 classes (50 x 36) = 1800
3 classes (75 x 36) = 2700 !

(2004 included a VISITview session & *Sentinels against the Storm*)

The Satellite Meteorology CD-ROM and on-line course

http://cimss.ssec.wisc.edu/satmet/





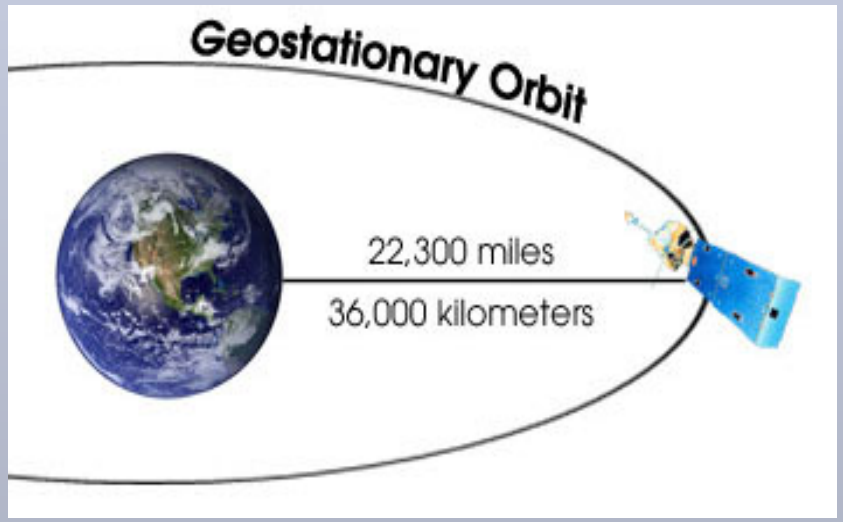
Dozens of hands-on Teaching Applets, Discovery Images, Discovery quizzes, Animations, Faders, and spectacular images!

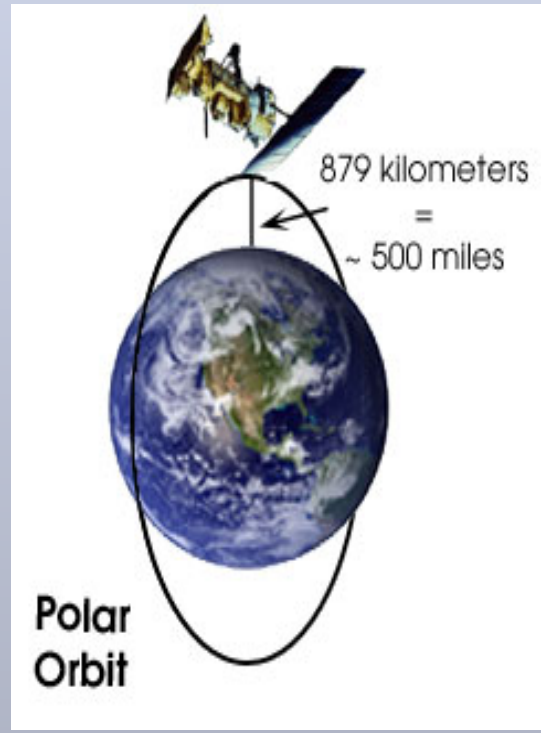
The Modules in the Sat Met course

Designed to be stand-alone units
with a sequential approach encouraged

1) Introduction: The evolution of remote sensing technology
includes careers in satellite meteorology

2) Weather Satellites and Orbits:
A brief history and an explanation of orbits and instruments

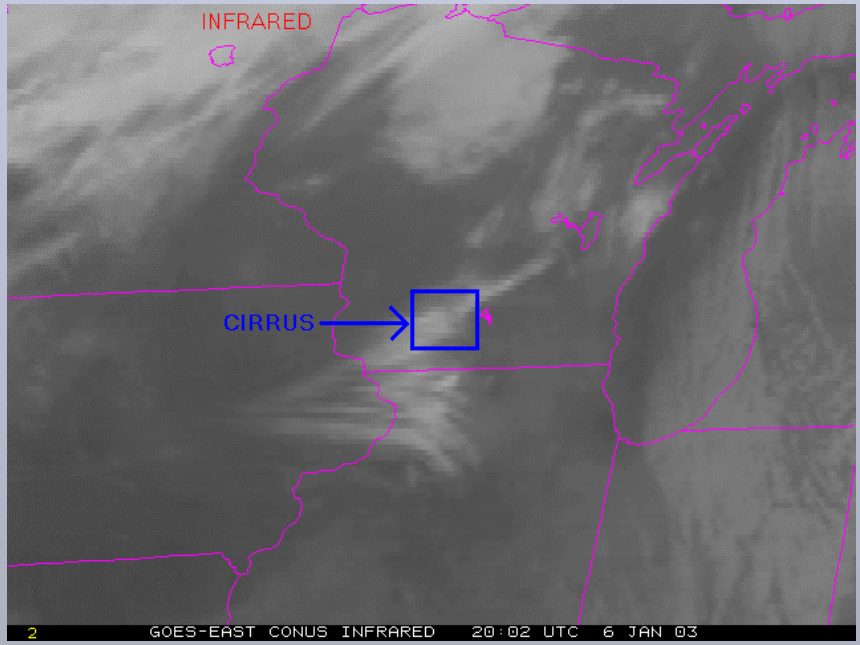


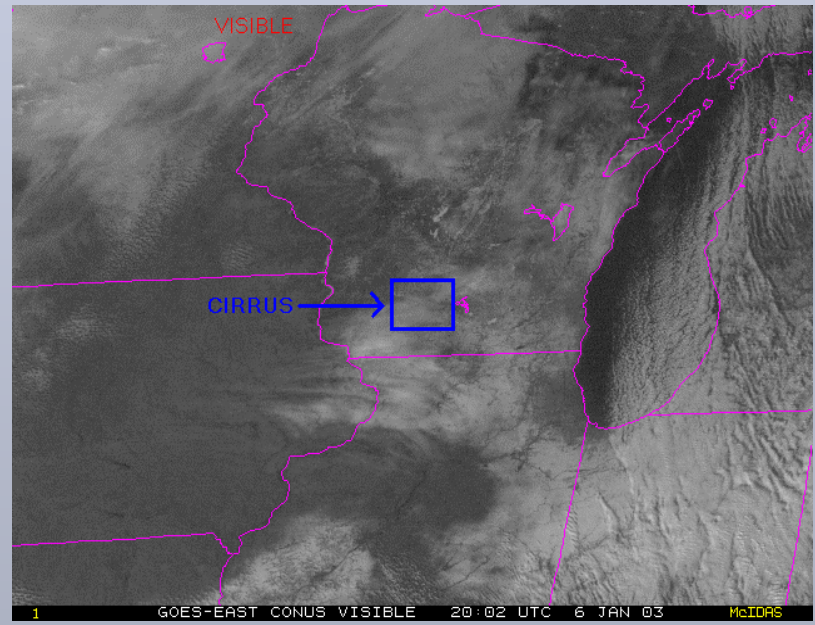


3) The Electromagnetic Spectrum - Making the connection between light (electromagnetic radiation) and satellite images

4) **Cloud Module**

Features pictures of a cloud from the ground and **faders** to shift between visible & IR images of the same cloud!





We've looked at clouds from both sides now …

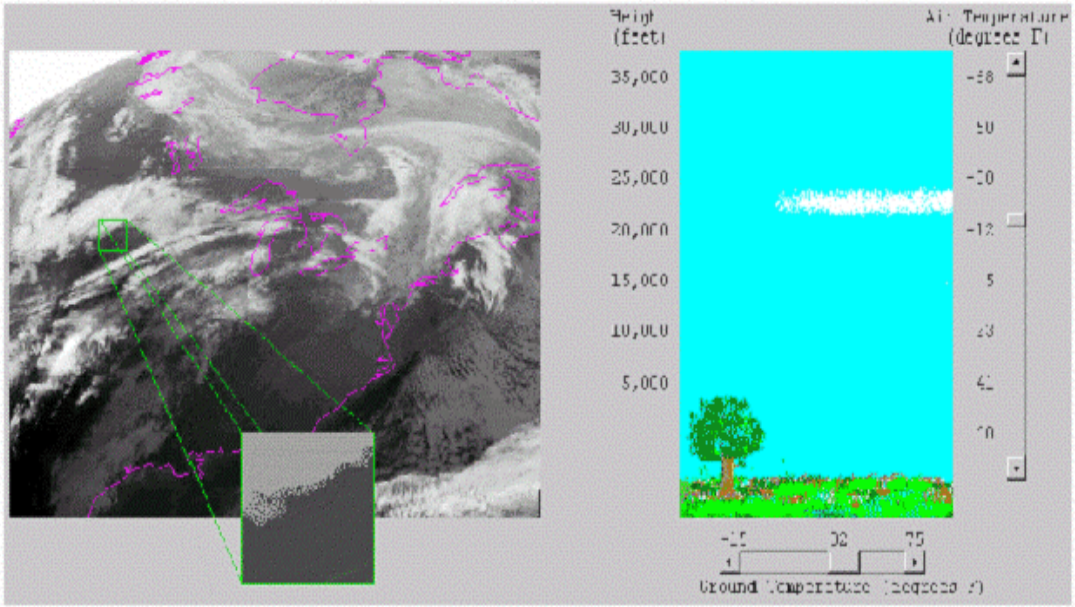
5) **Satellite Images**

Visible, IR, Water Vapor

Dozens of discovery images & discovery quizzes

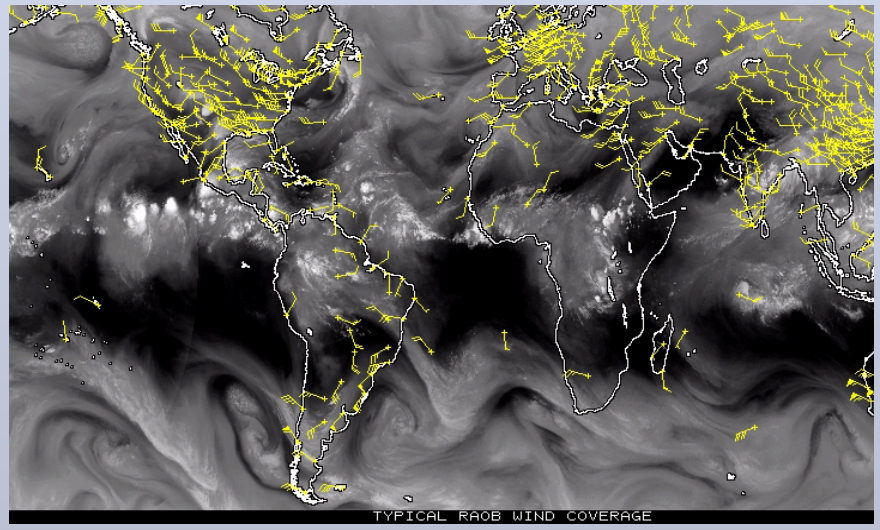
Applet for Interpreting Satellite Imagery

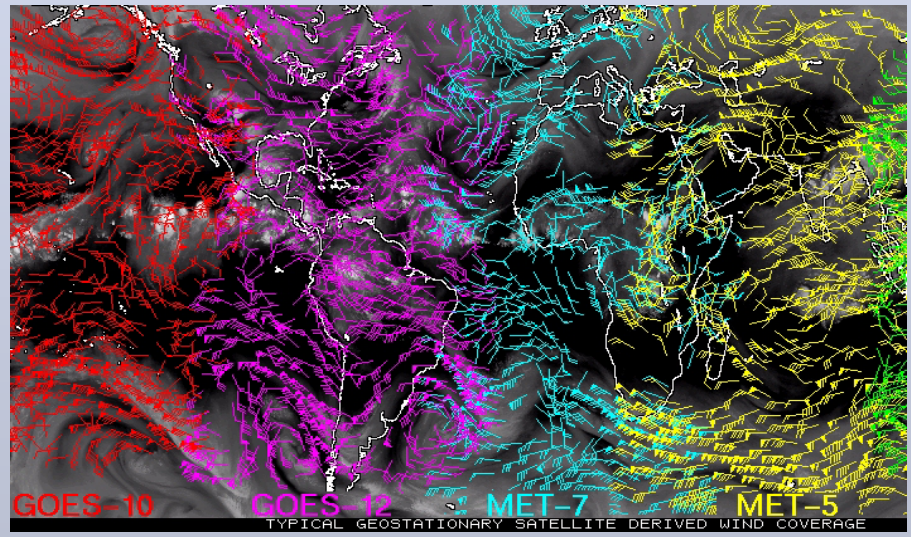
* Set cloud altitude
* Set ground temperature
* Observe what the satellite "sees"

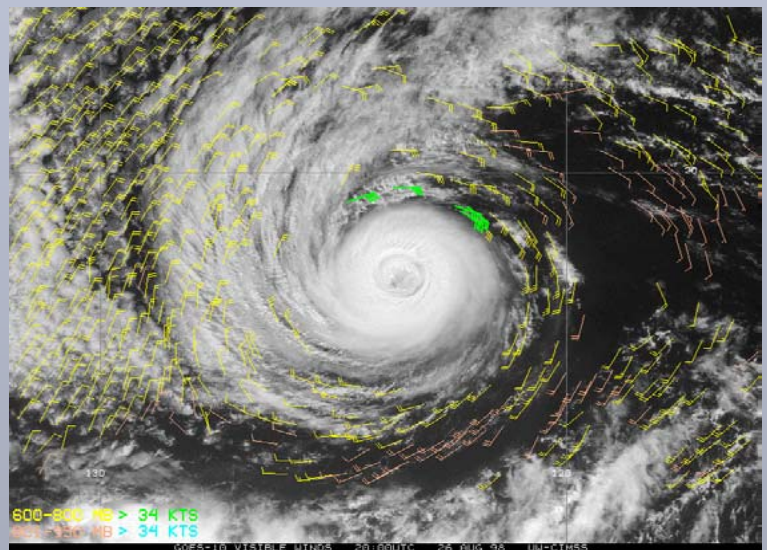


6) **Satellite Winds**

Using satellite images to derive winds

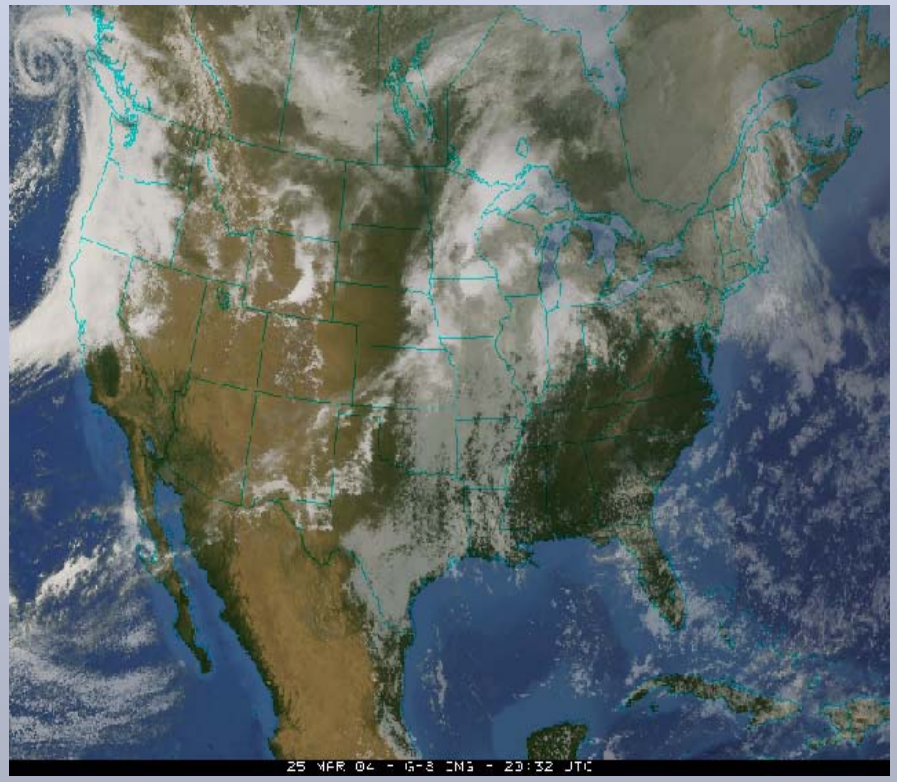


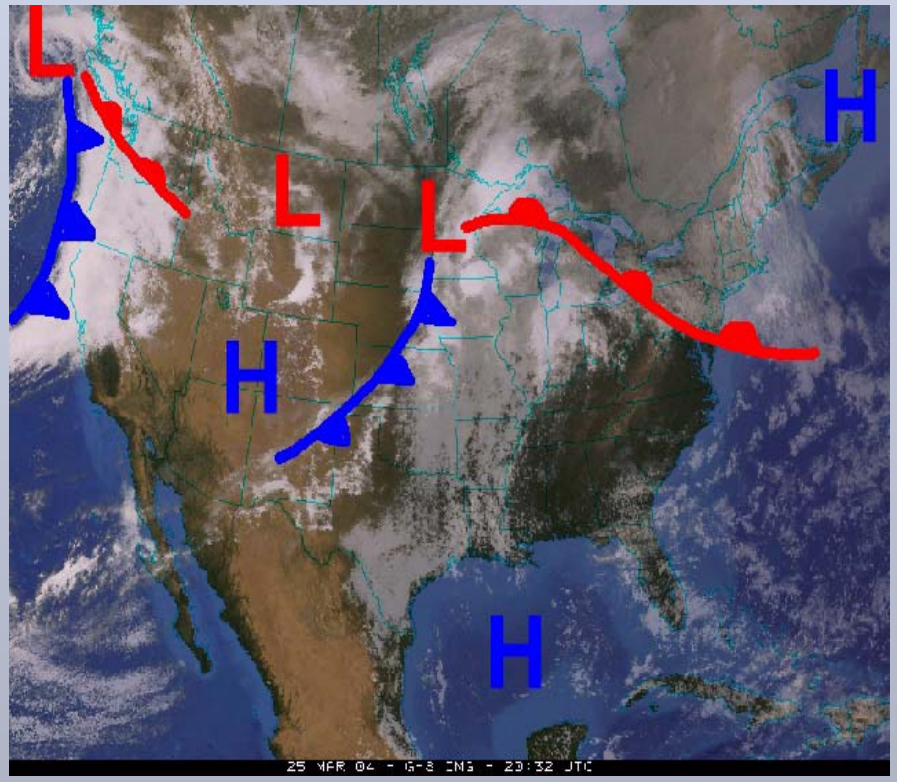




7) **Weather Forecasting**

Using satellite images in weather forecasting

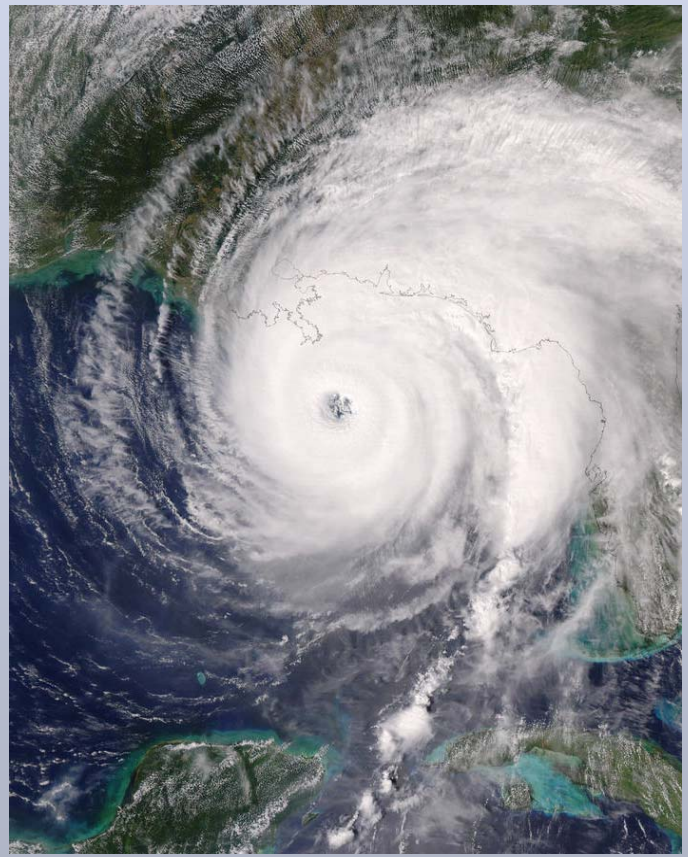




Starting with a composite satellite image, discovery quizzes prompts students to identify where the weather systems are located

8) **Wild Weather**

Thunderstorms, tornadoes, hurricanes, blizzards

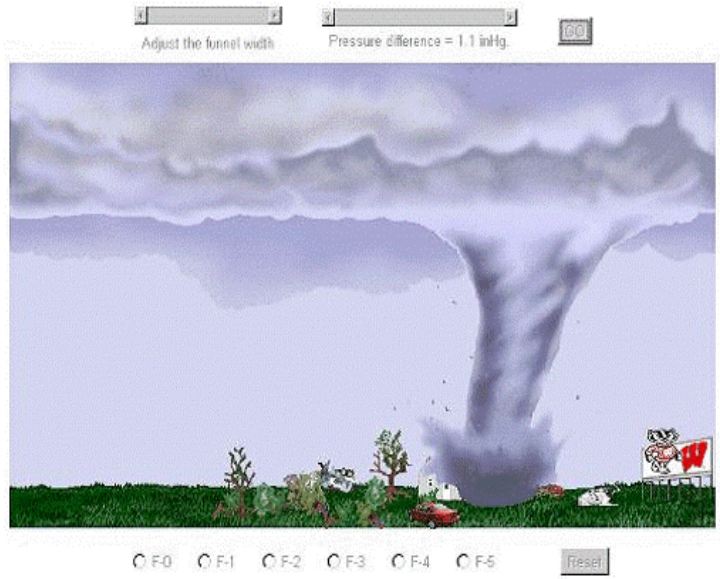


Tornado Applet

* Adjust funnel width

* Adjust pressure difference between funnel core and surroundings

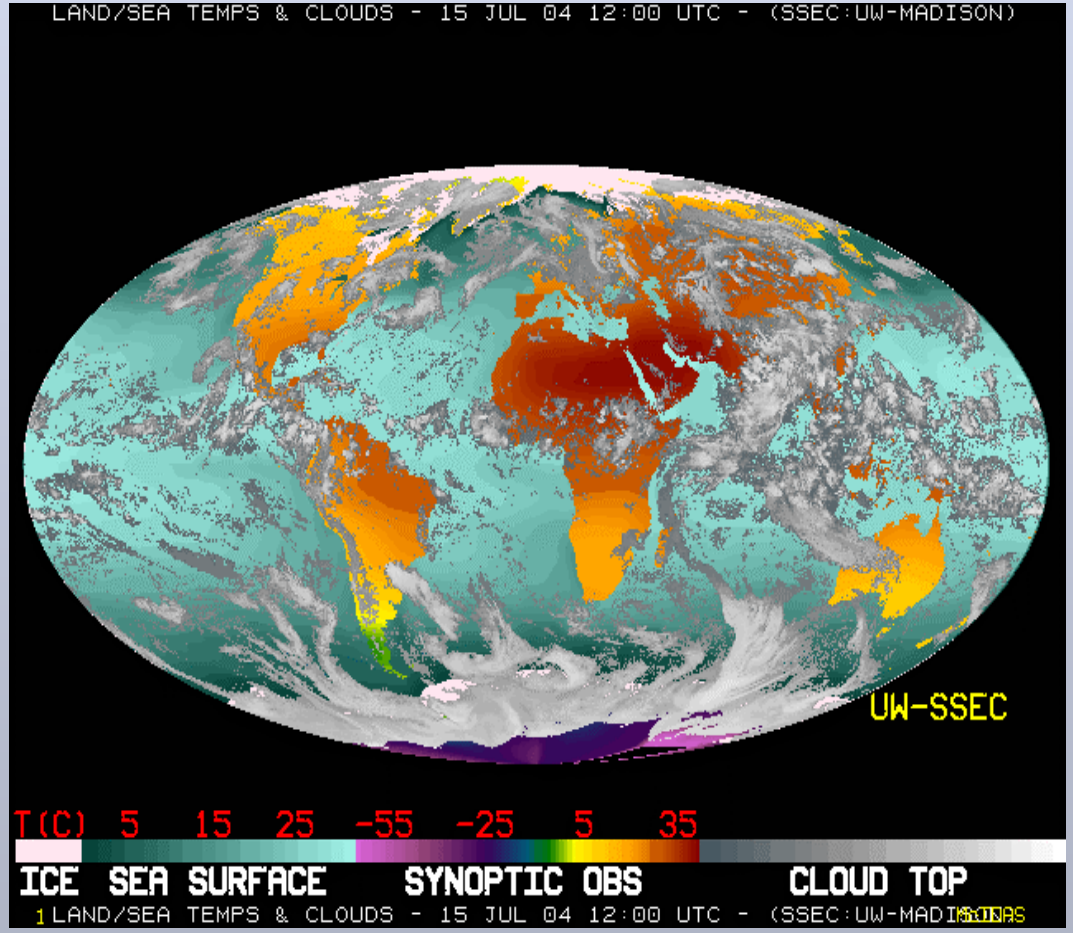
* After simulation, pick the F-scale from the observed destruction



Includes a summary of the 2004 Hurricane season

9) Monitoring the Global Environment

Satellites and Stewardship



Includes information on:

- Biomass Burning
- Climate Change
- Trace Gas Monitoring
- Urban Heat Islands

And *lots* of spectacular images and animations

SOSE & GOES-R

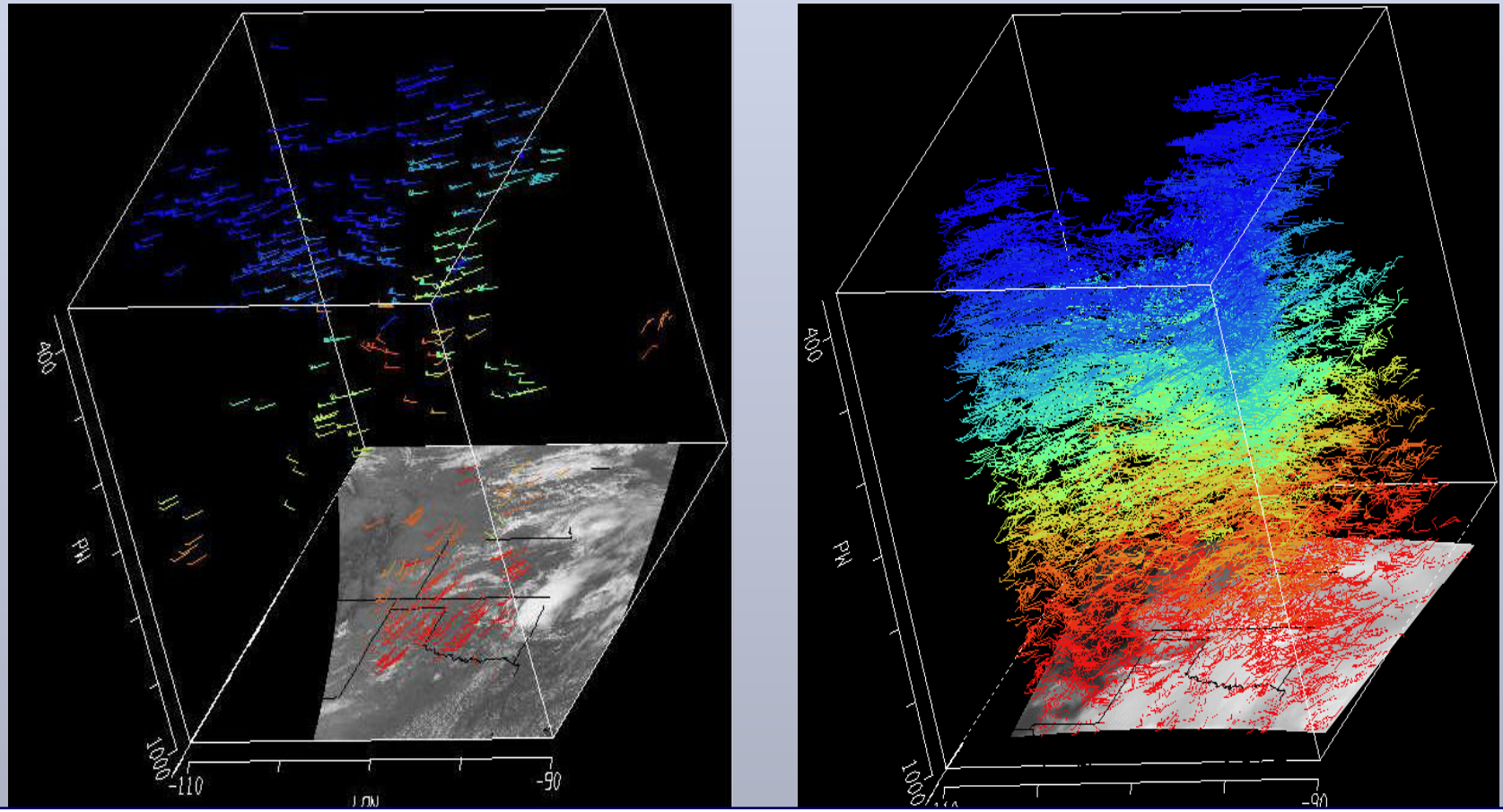
Outreach Activities under development

SOSE - Satellite Observations in Science Education

A collaboration between CIMSS and the AMS Education Program (supported by NASA) to provide teachers and students with interactive learning experiences in remote sensing & data analysis.

GOES-R Outreach & Education

Add a **Future Instruments module** to our Sat Met course highlighting the advantages of High Spectral Resolution



Current GOES operational winds (left) compared with increased coverage from GOES-R (simulated on right)

Summary

CIMSS has been engaged in Outreach & Education Activities for over two decades, developing cutting-edge software while networking with professional meteorologists, college students, K-12 educators and high school students to continually raise awareness, comprehension & appreciation for satellite technology.

We will continue these efforts for GOES-R and all future satellite missions.